

In the Claims

Please amend the claims as follows:

Claims 1-2. (Canceled)

3. (Currently amended) ~~The circuit of claim 1 further comprising:~~ A circuit comprising:
a voltage-to-current converter having a differential input node and a differential output
node;
a current multiplier coupled to the differential output node of the voltage-to-current
converter circuit and including an output node;
a load device coupled to the output node of the current multiplier;
a second voltage-to-current converter having a differential input node and a differential
output node; and
a second current multiplier coupled to the differential output node of the second voltage-
to-current converter;
wherein the current multiplier and the second current multiplier each have differential
output nodes coupled in common.
4. (Original) The circuit of claim 3 further comprising a pair of loads coupled to the
differential output nodes of the current multiplier and the second current multiplier to develop a
differential output voltage.
5. (Original) The circuit of claim 3 wherein the current multiplier comprises:
a diode-connected control transistor; and
a plurality of selectable current source circuits coupled to the diode-connected control
transistor.

6. (Original) The circuit of claim 5 wherein each of the plurality of selectable current source circuits includes:

a current source transistor having a gate; and

a select transistor coupled source-to-drain between a gate of the diode-connected control transistor and the gate of the current source transistor.

7. (Canceled)

8. (Currently amended) ~~The circuit of claim 7 further comprising:~~ A circuit comprising:
a voltage-to-current converter having a differential input node and a differential output
node;

a current multiplier coupled to the differential output node of the voltage-to-current
converter circuit, the current multiplier includes a plurality of selectable current source circuits to
provide a digitally controlled programmable gain;

a second voltage-to-current converter; and

a second current multiplier having a digitally programmable current gain, the second current multiplier coupled to be responsive to the second voltage-to-current converter circuit and having an output node coupled in common with an output node of the current multiplier.

9. (Currently amended) ~~The circuit of claim 7 wherein the circuit comprises~~ A circuit
comprising:

a plurality of voltage-to-current converters having differential input nodes and differential
output nodes; and

a plurality of current multipliers, each including a plurality of current source circuits to
provide a digitally controlled programmable gain,

each of the plurality of voltage-to-current converters being coupled to a corresponding one of the plurality of current multipliers, and wherein the plurality of current multipliers have output nodes coupled in common.

10. (Original) The circuit of claim 9 further comprising a load device coupled to the output nodes coupled in common.

Claims 11-12. (Canceled)

13. (Currently amended) ~~The circuit of claim 12 wherein~~ A circuit comprising:
a differential pair of input transistors to convert a differential input voltage into a first differential current;
a current multiplier coupled to the differential pair of transistors to produce a second differential current in response to the first differential current, the current multiplier including a plurality of selectable current source circuits, and wherein each of the plurality of selectable current source circuits is configured to be responsive to a digital control signal; and
a pair of load devices to produce a differential output voltage in response to the second differential current.

14. (Currently amended) ~~The circuit of claim 11 further comprising:~~ A circuit comprising:
a differential pair of input transistors to convert a differential input voltage into a first differential current;
a current multiplier coupled to the differential pair of transistors to produce a second differential current in response to the first differential current; and
a pair of load devices to produce a differential output voltage in response to the second differential current;
a second differential pair of transistors to receive a second differential input voltage; and
a second current multiplier coupled between the second differential pair of transistors and the pair of load devices.

15. (Original) The circuit of claim 14 wherein the second current multiplier is configured to vary a differential output current in response to a second set of digital control signals.

Claims 16-17. (Canceled)

18. (Currently amended) ~~The integrated circuit of claim 17 further including~~ An integrated circuit comprising a voltage multiplier circuit that includes a current multiplier with a digitally programmable current gain;

a voltage-to-current converter circuit coupled to an input side of the current multiplier;
and

a processor coupled to the current multiplier to provide a digital value such that an output current of the current multiplier is responsive to the digital value and a voltage input to the voltage-to-current converter circuit.

19. (Canceled)

20. (Currently amended) ~~The integrated circuit of claim 19 further comprising~~ An integrated circuit comprising a voltage multiplier circuit that includes a current multiplier with a digitally programmable current gain, the current multiplier comprising a plurality of current mirrors with digitally programmable gain, each of the plurality of current mirrors having a common output node; and

a plurality of voltage-to-current converter circuits, wherein each of the plurality of voltage-to-current converter circuits is coupled to a corresponding one of the plurality of current mirrors.

21. (Original) The integrated circuit of claim 20 further comprising a load device coupled to the common output node to produce an output voltage from a sum of current mirror output currents.

Claims 22-24. (Canceled)

25. (Currently amended) ~~The integrated circuit of claim 23 wherein~~ An integrated circuit comprising:

a plurality of voltage-to-current converters to receive a plurality of differential input voltages and produce a plurality of differential currents; and

a plurality of current multipliers coupled to a common output node, each of the plurality of current multipliers coupled to a corresponding one of the plurality of voltage-to-current converters to receive a corresponding one of the plurality of differential currents, and wherein each of the plurality of current multipliers has a programmable current gain.

26. (Original) The integrated circuit of claim 25 wherein each of the plurality of current multipliers includes a digital input port to influence the programmable current gain.

27. (Original) The integrated circuit of claim 25 further comprising a processor coupled to the plurality of current multipliers to set the programmable current gain.

28. (Canceled)